

CLAIMS

1. A β -lactam acylase
which is produced by a microorganism belonging to the
5 genus Stenotrophomonas.

2. A β -lactam acylase
which is produced by the Stenotrophomonas maltophilia
KNK12A strain.

10 3. A gene
which contains a DNA coding for a protein comprising
an amino acid sequence identical or substantially identical
with the amino acid sequence shown under SEQ ID NO:2.

15 4. A gene
which contains a DNA coding for a protein in which
the 204th methionine in the amino acid sequence shown under
SEQ ID NO:2 is substituted with valine.

20 5. A gene
which contains a DNA coding for a protein in which
the 204th methionine in the amino acid sequence shown under
SEQ ID NO:2 is substituted.

25 6. A gene
which contains a DNA coding for a protein comprising
an amino acid sequence in which one or a plurality of amino
acids in the amino acid sequence shown under SEQ ID NO:2
30 have undergone deletion, substitution or addition and
having β -lactam acylase activity.

7. A gene
which contains a DNA coding for a protein in which
35 the amino acid sequence shown under SEQ ID NO:2 is modified

after translation and having β -lactam acylase activity.

8. A gene

which contains a DNA in which the base sequence
5 corresponding to the site coding for the amino acid
sequence shown under SEQ ID NO:2 in the base sequence shown
under SEQ ID NO:1 codes for the amino acid sequence
identical with the amino acid sequence shown under SEQ ID
NO:2.

10

9. The gene according to any one of Claims 3 to 8
which is isolated from a microorganism belonging to
the genus Stenotrophomonas.

15

10. A microorganism
which produces a protein comprising an amino acid
sequence identical or substantially identical with the
amino acid sequence shown under SEQ ID NO:2 and belongs to
the genus Stenotrophomonas.

20

11. A polynucleotide
which contains a base sequence coding for a protein
comprising an amino acid sequence identical or
substantially identical with the amino acid sequence shown
25 under SEQ ID NO:2.

30

12. A polynucleotide

which contains a base sequence coding for a protein
in which the 204th methionine in the amino acid sequence
shown under SEQ ID NO:2 is substituted with valine.

35

13. A polynucleotide

which contains a base sequence coding for a protein
in which the 204th methionine in the amino acid sequence
shown under SEQ ID NO:2 is substituted.

14. A polynucleotide
which contains a base sequence coding for a protein
comprising an amino acid sequence in which one or a
5 plurality of amino acids in the amino acid sequence shown
under SEQ ID NO:2 have undergone deletion, substitution or
addition and having β -lactam acylase activity.
15. A polynucleotide
10 which contains a base sequence coding for a protein
in which the amino acid sequence shown under SEQ ID NO:2 is
modified after translation and having β -lactam acylase
activity.
15. A polynucleotide
which contains a base sequence in which the base
sequence corresponding to the site coding for the amino
acid sequence shown under SEQ ID NO:2 in the base sequence
shown under SEQ ID NO:1 codes for the amino acid sequence
20 identical with the amino acid sequence shown under SEQ ID
NO:2.
17. A polynucleotide
which contains the base sequence shown under SEQ ID
25 NO:1.
18. The polynucleotide according to any one of
Claims 11 to 17
which is isolated from a microorganism belonging to
30 the genus Stenotrophomonas.
19. A protein
which comprises an amino acid sequence identical or
substantially identical with the amino acid sequence shown
35 under SEQ ID NO:2.

20. A protein
which comprises an amino acid sequence in which the
204th methionine in the amino acid sequence shown under SEQ
5 ID NO:2 is substituted with valine.
21. A protein
which comprises an amino acid sequence in which the
204th methionine in the amino acid sequence shown under SEQ
10 ID NO:2 is substituted.
22. A protein
which comprises an amino acid sequence in which one
or a plurality of amino acids in the amino acid sequence
15 shown under SEQ ID NO:2 have undergone deletion,
substitution or addition and having β -lactam acylase
activity.
23. A protein
20 in which the amino acid sequence shown under SEQ ID
NO:2 is modified after translation and having β -lactam
acylase activity.
24. A gene
25 which contains a transcription regulatory sequence
contained in the gene according to any one of Claims 3 to 9.
25. A gene
which contains a translation regulatory sequence
30 contained in the gene according to any one of Claims 3 to 9.
26. The gene according to any one of Claims 3 to 9
under the control of regulon containing a transcription
and/or translation regulatory sequence,
35 wherein either or both of said regulatory sequence(s)

is (are) substituted with other transcription and/or translation regulatory sequence each obtainable by the same or different living organism.

5 27. A recombinant vector
 which comprises at least one of the gene according to
Claim 3, 4, 5, 6, 7, 8, 9, or 26.

10 28. A transformant
 which is obtainable by transforming a host with the
recombinant vector according to Claim 27.

15 29. The transformant according to Claim 28,
 wherein the host is a gram-negative microorganism.

20 30. The transformant according to Claim 28,
 wherein the host is a gram-positive microorganism.

25 31. The transformant according to Claim 28
 which is pUCNTkmTn5-KNK-L/HB101 (FERM BP-8362).

30 32. The transformant according to Claim 28
 which is pUCNTTn5-MuKNK-L1/HB101 (FERM BP-8369).

35 33. A method of producing a β -lactam acylase
 which comprises culturing the transformant according
to any one of Claims 28 to 32, and recovering a β -lactam
acylase produced by said transformant.

40 34. A β -lactam acylase
 which comprises an amino acid sequence coded by the
polynucleotide according to any one of Claims 11 to 18.

45 35. An immobilized β -lactam acylase
 which is obtainable by culturing the microorganism

according to Claim 10 or the transformant according to any one of Claims 28 to 32, and immobilizing the cell, cell-mixed culture, cell disrupted product, or a β -lactam acylase extracted and/or purified from the cell.

5

36. A method of producing a β -lactam acylase in a transformant or of enhancing the production

which comprises preparing the recombinant vector

according to Claim 27, transforming a host with said

10 recombinant vector, cloning the obtained transformant, and selecting.

37. A method of producing a β -lactam antibiotic by using the β -lactam acylase according to Claim 34.

15

38. The method according to Claim 37,

wherein the β -lactam antibiotic is amoxycillin.

20

25

30

35